

ATTACHMENT A: Preferred mass transit route – response to further queries

Purpose

This paper has been prepared to address a number of issues raised at the LGWM Governance Group meeting on 25 July 2018 in relation to the identified preferred mass transit route. It supplements the write-up of the mass transit route workshop held on 5 July to specifically address the further queries raised.

Background

A LGWM workshop was held on 5 July to examine mass transit route options between Wellington station and Wellington airport. It was attended by members of the LGWM team, and external experts to provide specialist input on LRT implementation, engineering issues, retail impacts and PT network planning.

The preferred mass transit route was identified as:

- Via the waterfront/quays through the CBD
- Via Taranaki St and Memorial Park/Tasman St to Adelaide Road and Newtown
- Via a new Mt Albert tunnel to Kilbirnie, Miramar, Airport

The map below shows the three sections combined to identify the preferred route for mass transit for the purpose of inclusion in the updated Recommended Programme of Investment (RPI).



It is important to note that the preferred mass transit corridor was identified using the information available and advice from the various disciplines at this stage of the programme. This included consideration of a range of matters, including: potential patronage, operational requirements, urban development potential, property impacts, construction impacts, and cost. Further work will be done to confirm the exact route in the next stage.

Mass transit – Segment 1 – Wellington Station to Te Aro (through the CBD)

Options considered:

- Golden Mile (Red)
- Waterfront/Quays (Blue)
- Featherston and Victoria (Yellow)

Preferred routes identified for RPI:

Waterfront/Quays for light rail/like light rail

The Golden Mile was identified as preferred second CBD PT spine



Response to further queries

<p>What is the urban development potential associated with the quays option?</p>	<p>Wellington City Council owns a number of sites in close proximity to the waterfront quays. These include:</p> <ul style="list-style-type: none"> - 2-4 Jervis Quay - site of Tony's Tyres Service and adjoining car parking building - Civic precinct – including land around the civic square - Michael Fowler car park - The Waterfront – including Kumutoto Site 9 - 50-68 Cable Street – the site of the planned Conference Centre <p>In addition to Council-owned sites, there are a number of private re-development projects along the waterfront quays; these are at various stages of the planning and design process and therefore confidential. They include under-capitalised sites where the building height and massing provisions of the District Plan are not currently fully realised, as well as buildings which are no longer meeting market demand with regards to seismic performance or office grade. The recent re-development of BP House into the new Deloitte Building illustrates these market changes. Sites along the waterfront quays, with their views over the harbour and good natural light, will remain the premier location for A-grade corporate offices for the foreseeable future.</p>
<p>Why is the quays considered a more resilient route option?</p>	<p>Resilience to seismic events was considered for the different mass transit route options. For the purpose of selecting a preferred route, it was assumed that LRT could be the mass transit mode.</p> <p>The key risks considered were liquefaction and building damage affecting the road corridor. Damage to the tracks from liquefaction and lateral spreading can be limited to a degree through design measures (ground improvement, and more resilient track foundations). Building damage is something that the agencies designing or operating the LRT system have little control over.</p> <p>Following a large earthquake, the risk of liquefaction is greater along the waterfront route and the building damage safety risk is greater along the Golden Mile and Featherston/Victoria St routes. In such earthquakes, with an extended period of large aftershocks, the demand for an LRT system would be less because of the widespread</p>

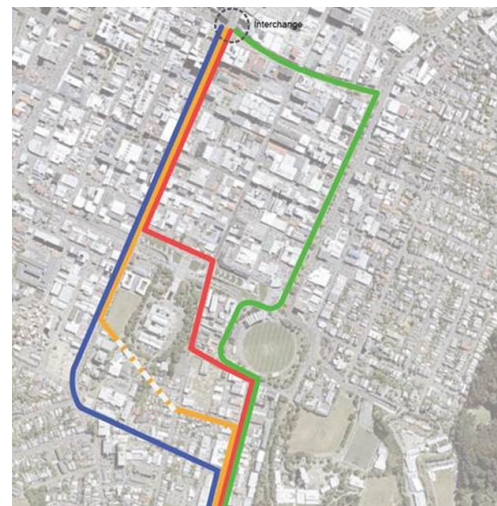
	<p>damage to the CBD.</p> <p>However, even after a relatively moderate earthquake, road corridor closures can occur due to building damage, as illustrated by building damage in the distant Kaikōura earthquake. In such cases the CBD will be largely functional, and the demand for the LRT will remain, but even localised closures due to building damage could close the LRT operation.</p> <p>On balance, it is considered that an LRT system along the Golden Mile or Featherston/Victoria Street would have a lower level of resilience following a seismic event.</p>
<p>Why wasn't mass transit via Featherston/Victoria St identified as the preferred route?</p>	<p>A number of factors led to the conclusion that mass transit along Featherston St/Victoria St was an option, but that the quays was a better option. These included:</p> <ul style="list-style-type: none"> • The degree of friction from side roads and vehicle crossings. This was considered to make the route more difficult to deliver the priority and reliability needed for mass transit. In order for LRT/LLRT to achieve the operating speed necessary to ensure it is viable, it needs to have a very high level of segregation from local traffic movements. This includes not only a dedicated lane but likely prohibition of turning and crossing movements over the LRT corridor. This would severely restrict access to side roads that are needed to access the parking and servicing facilities in the area (i.e. not being able to drive across Featherston St on Waring Taylor St, Johnston St, Panama St, etc). This level of segregation would be best achieved on either Lambton Quay or the waterfront/quays route due to fewer side roads. • The impact on local traffic circulation. The function of this route within the one-way system was considered, as was its role in providing general traffic access to the CBD for deliveries/servicing, and vehicle access to key sites like Police headquarters. • Challenging corners and geometry. This route option involved several tight corners compared to the other route options. The existing built form means these corner would be more difficult to ease. Associated impacts relating to property, slower vehicle speeds and noise from tight cornering were all considered. • Parking impact. This route would have a larger impact on short stay parking than other options. A rough estimate would be 50-100 more parking spaces in total.
<p>How was the impact on retail of the different options considered?</p>	<p>Advice provided by specialist retail planning consultant Retail First helped inform the option selection for this segment of the mass transit route in particular.</p> <p>The impact on spreading retail concentration as a result of providing mass transit on an alternative route to the Golden Mile was not considered to be significant risk. It was considered likely that large corporate retailers would want to remain on the Golden Mile – as the premium shopping street - and that new businesses, particularly hospitality retailers, would move in to side streets to take advantage of increased pedestrian activity to/from the mass transit route.</p> <p>The biggest risk to retail was seen as the impact of short-medium term disruption if mass transit were to be constructed along the Golden Mile. This could potentially exacerbate the current retail fragility to the</p>

	<p>extent that the big corporate retailers may leave altogether.</p>
<p>Will putting mass transit on the waterfront/quays cause unacceptable disruption to general traffic?</p>	<p>Mass transit along the quays will involve removing two of six existing lanes traffic, and a reduction in general traffic capacity of around 33%. Initial analysis suggests that this capacity reduction can be accommodated without significant disruption as part of the wider RPI package of interventions.</p> <p>The RPI aims to remove traffic from the city centre and enhance access for people to the waterfront. The RPI takes a network approach that involves reallocating general traffic capacity from the quays route to the SH1 route via the duplicated Terrace Tunnel. We know that approximately 20% of the general traffic on the quays is through traffic to the south and east, not destined for the CBD, and these trips will become quicker and more reliable via the SH1 route under the RPI. A reduction in general traffic demand is also expected as a result of mass transit and other public transport investment and demand management pricing measures.</p>

Mass transit – Segment 2 - Te Aro to Newtown

Options considered:

- Taranaki Street, with a connection to Adelaide Rd Sub-options:
 - a. Memorial Park /Tasman (Red)
 - b. Tunnel Taranaki to Adelaide (Yellow)
 - c. Massey link (Blue)
- via Kent/Cambridge Terrace, Basin Reserve, Adelaide Rd (Green)



Preferred route identified for RPI:

Taranaki Street with an ‘at grade’ connection to Adelaide Road via Memorial Park/Tasman

Response to further queries

<p>Why was the ‘red’ option via Memorial Park preferred over the ‘yellow’ option via a new tunnel?</p>	<p>The Memorial Park/Tasman St (red) option was identified as the current preferred route over the Mt Cook tunnel (yellow) option due to a combination of factors:</p> <ul style="list-style-type: none"> • Covers more of Adelaide Road - urban redevelopment potential • Uses existing grade separation to avoid conflict with SH1 • Provides better access to schools to the east of the Basin • Likely to cost the least and be easiest to deliver. <p>Deliverability challenges in relation to the ‘red’ option were acknowledged in relation to tight bends, potential impact on Mt Cook School and a steep gradient for a short section – but there were equally significant deliverability issues with all other options.</p>
<p>What are the property impacts?</p>	<p>The main potential areas of property impact for the Memorial Park/Tasman St (red) option are Pukeahu Park itself (a heritage area), land along the southern boundary of Mt Cook School, properties along the east side of Tasman Street, and property on the corner of Rugby St/Adelaide Rd. Construction would likely require the relocation of Mt Cook school buildings within the school boundaries or potentially a temporary relocation of the whole school.</p> <p>The main potential areas of property impact for the Mt Cook tunnel ‘yellow’ option are the playing field at Wellington High School (tunnel approach and portal), several properties along the west side of Tasman Street, and properties along the south side of Douglas Street (tunnel portal and link to Adelaide Rd). Other tunnel location sub-options have been considered, which traverse directly under the Dominion Building and retain a usable playing field, but these have other different property impacts.</p> <p>These impacts are only indicative and detailed design is needed to understand the extent and nature of any impacts.</p> <p>Key assumptions include no on-street parking along the mass transit route, minimising impact on heritage areas, and no impact on the recently consented Chinese Embassy site.</p> <p>The relative extent of property impact between the options is broadly similar, without applying different values to any particular properties. Further detailed work is required before any particular alignment, and the associated impacts, can be confirmed – the assessment provided is for comparing feasibility of alternatives only.</p>

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<p>What is the impact of the tight bends?</p>	<p>The main impact of tight bends along the mass transit route will be a reduction in vehicle speed (and potential for rail track noise under an LRT scenario). The 'red' option does have more corners than other options, however the environment (areas of open space) through this area is considered to provide some flexibility for easing or smoothing corners and they are not expected to be as tight as those shown in the route option maps.</p> <p>The extent to which vehicle speeds are affected by corners along the route will need to be examined at the next stage. This will be particularly important under an LRT scenario, to achieve the high operating speed necessary to ensure it is viable.</p>
<p>What is the cost difference?</p>	<p>The rough order cost estimates suggest that tunnel (yellow) option is around \$70M more than the Memorial Park (red) option.</p>
<p>How do they serve the local schools?</p>	<p>The two stations identified through this particular section are on Taranaki Street (north of SH1) and on Adelaide Road. The Memorial Park (red) option would involve a station on Adelaide Road very close to the Basin providing better access for St Marks School, Wellington College, and Wellington East Girls College. The tunnel (yellow) option would take the station further from two of those three schools, and would not provide better access to Wellington High School (Taranaki St) as the Taranaki St station (under red or yellow) would provide closer access for this school.</p>

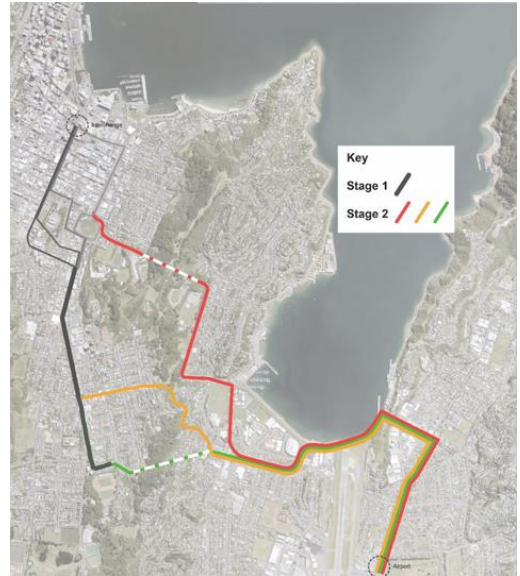
Mass transit – Segment 3 - To the east

Options considered:

- Extend from Newtown/Zoo via Mt Albert tunnel to the east (Green)
- Via Constable St/Crawford Rd to the east (Yellow)
- New branch from Basin Reserve to the east (Red)

Preferred routes identified for RPI:

Extend from Newtown/Zoo via Mt Albert tunnel



Response to further queries

<p>Why does the preferred route not go under the airport runway?</p>	<p>One of the options considered for this segment of the mass transit route was a direct route between Kilbirnie and the airport under the airport runway area.</p> <p>The following issues and constraints were noted in relation to construction:</p> <ul style="list-style-type: none"> • Agreements would be required from multiple organisations/companies with regard to: the operational and safety requirements of the airport itself (WIAL); changes in timetabling (airline companies); safety of aircraft (Pilots Association); and design issues (CAA). • A cut and cover tunnel that crosses the runway and the grassed adjacent runway edge safety strip is not possible without providing an alternative runway to the same standard and length as the existing runway for aircraft use while construction is taking place. • Agreement from all parties that the airport could be safely operated with adjacent construction and reduced safety strip widths for aircraft. <p>It was assumed that only a bored tunnel (rather than cut and cover) could mitigate these issues and constraints.</p> <p>Based on the knowledge that a large portion of the runway area (including the adjacent edge safety strip) was constructed using reclaimed material, it was assumed that a cover of 20m above the tunnel bore would be required to maintain the stability of the operational runway whilst the tunnel was being bored underneath. This would come at a significant cost and would mean approximately 400m of ramping to the west side of the tunnel through the residential area of Kilbirnie. On the east side of the runway, it was assumed that an underground station could be provided such that ramping (within restricted available space) to the surface would not be required. The costs associated with a bored tunnel, ramping and undergrounding of a station were considered likely to be prohibitive.</p> <p>The option to build a mass transit route under the airport runway has not been excluded, but for the purposes of indicating what is considered, at this stage, to be a viable route, the option from Kilbirnie to the airport via Rongotai Road, State Highway 1, Miramar Ave and Hobart Street are identified as preferred in the RPI.</p>
<p>Why does the preferred mass</p>	<p>A number of factors combined led to the preferred route for mass transit</p>

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transit route go via Miramar to the Airport?

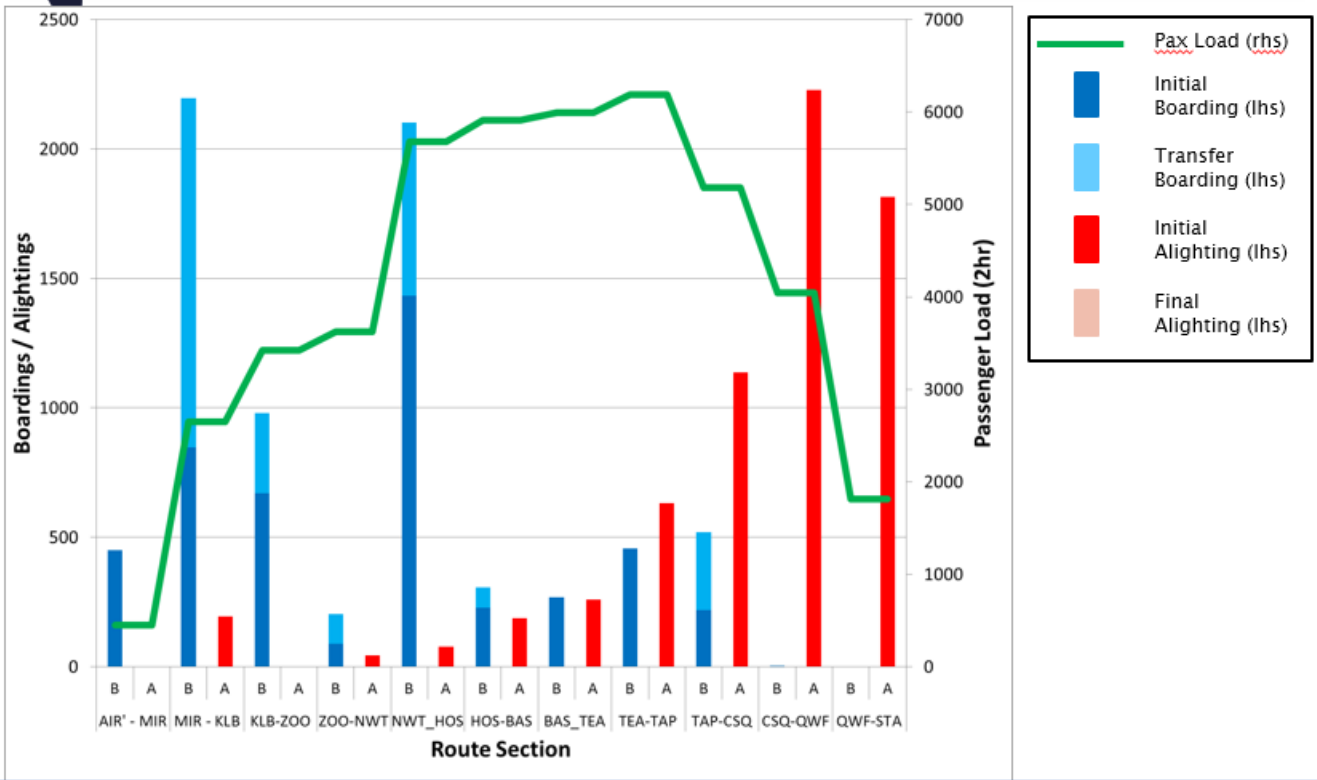
via Miramar, then to the Airport as the terminus. These included:

- Current trip demand
 - Demand for public transport is currently much higher from Miramar, Strathmore, and Seatoun than from the airport.
 - Only 20 – 35% of car traffic along Cobham Drive currently comes from the Airport. The remaining car traffic comes from the Miramar, Strathmore, and Seatoun areas.

It will be important to provide direct, efficient trips to retain current users and attract new users from the key areas of demand.

- As a result of improved accessibility delivered by mass transit, future public transport trip demand from Miramar is expected to be significantly higher than trip demand from the airport (see graph below – source MRCagney).
- Boarding/alighting with baggage takes longer and supports airport as the terminus station
- Cost and engineering issues associated with a mass transit tunnel under the runway (see fuller explanation above).

LRT Patronage – 2036, AM Peak RPI + charge, N/B



Mass transit station locations

Response to further queries

<p>Are there sufficient visitor numbers to/from the ASB sports centre to warrant locating a mass transit stop nearby?</p>	<p>ASB is a reasonably large trip generator. Visitor numbers to ASB sports stadium are around 70-90,000 per month - except Dec/Jan when they drop to around 30,000. Across the week, Saturday is the busiest day with around 4,500 visitors compared with around 2,500 visitors every other day of the week. More detail about visitor mode share, origin and time of day should be surveyed in the next stage.</p> <p>A stop would potentially be needed at the east end of Rongotai/Troy Street regardless of the ASB sports centre, simply due to the high demand at that location for Rongotai College as well as the strong pedestrian catchment from the Rongotai east area which is beyond easy walking distance of Kilbirnie. Most of this demand will be at peak times. A stop/station at this location that is only available off-peak or during big events is not recommended for this reason.</p> <p>It is recommended that a full time stop be considered at this location at the next stage of detailed design. Balancing the needs of providing a fast mass transit service against local accessibility and minimising bus network duplication along the route will be important factors.</p>
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The following map shows indicative mass transit stop locations/spacing along the preferred route from Wellington Railway Station to Wellington International Airport with the potential ASB/Rongotai east stop identified.

